

XIX. *On the Hymenopterous Parasites of Coleoptera.*  
 First Supplement. By ERNEST A. ELLIOTT,  
 F.Z.S., and CLAUDE MORLEY, F.Z.S.

[Read March 1st, 1911.]

SINCE the publication of our Paper upon this subject, in these Transactions in 1907, much additional matter has come to our knowledge, principally through the works of Nees von Esenbeck, Dours, Professor Thomson, Curtis, Rev. T. A. Marshall, Dalla Torre, Kieffer, and papers in the earlier E. M. M., and by Pierre in *Révue Linn.* of 1903. This material now appears to have assumed sufficient bulk for publication, and should be used in conjunction with the original Paper, with which it is uniform and concurrently numbered. Additional hosts are printed in capitals and those already known to be attacked, but upon which additional observations are noted, in italics as before.

Oa. CICINDELA CAMPESTRIS, L.

Oβ. CICINDELA SYLVATICA, L.

It has recently become known that our rare Aculeate, *Methoca ichneumonoides*, Latr., is a true external parasite on these species. First, Gottfrid Adlerz observed (*Archiv. för Zoologi*, 1903, pp. 255-8) *Methoca* attacking larva of *C. sylvatica* on the bank of the Ljungan in Medelpad, Central Sweden. Secondly, the same author (*lib. cit.*, 1906, iv. pp. 1-48) describes in detail experiments with *Methoca* on *C. campestris* larvae in captivity. And lastly, B. E. Bouwman saw (*Tijdsch. v. Ent.*, 1909, pp. 284-294) *Methoca* enter a burrow of *Cicindela* larva at Breda in June; it paralysed its head, thorax and two basal segments, also biting the sternum; the egg is laid on the ventral surface of thorax; the *Methoca* emerges in four or five days, and appears to suck juices from *Cicindela* larva without any distinct incision; it leaves its host in about three weeks and forms a cocoon of sand-grains; no male *Methoca* were seen. Donisthorpe tells us it probably also attacks *Cicindela germanica*, L., since he has found it at Blackgang Chine.

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## 4a. CHLAENIUS IMPUNCTIFRONS.\*

A new species of the Proctotrypid genus *Prosacantha* has been bred by Riley from this Carabid in North America and named by him (Bull. U. S. Nat. Mus., 1893, p. 191) *P. caraborum*.

## 6a. GYRINUS.\*

A species of this genus is said by Ashmead (Canadian Entom., 1894, p. 25) to be preyed upon in Java by his Tryphonid, *Gausocentrus gyrini*.

7. *Gyrinus natator*, Scop.

Hellins supplementing (E. M. M., 1881, xviii, p. 88, Parfitt's notes (*l. e.*, p. 79) on *Hemiteles gyrini*, says that, besides *H. gyrini*, *H. persector* and *Pezomachus ? viduus*, a small species of *Pteromalus* emerged from the cocoons of *G. natator* at Exeter.

10. *Crocophilus maxillosus*, Linn.11. *Ocyppus olens*, Müll.

We were much gratified to discover, after the publication of our note on the latter species, Mr. W. F. Frohawk's account of undoubtedly the same host and parasite at Eltham in October 1883 (Entom., 1886, p. 225); in this case there were but nine parasites. Those we mentioned very certainly belong to the genus *Proctotrypes*, Latr. (= *Codrus*, Jur.) and not to *Apanteles*, as surmised; but the species is less positive, since those bred by Frohawk belonged to *P. ater*, Nees, while Kawall refers his to *C. pallidipes*, Jur., which also is not uncommon in Britain. It will be noted that Frohawk has no hesitation in calling the host-larva that of *C. maxillosus*, while we supposed it from purely circumstantial evidence to be that of *O. olens*. Curtis figures a similar parasitic pupa (Farm Insects, pl. G, fig. 47). Doubt might be cast upon the identity of the host of *Proctotrypes calcar*, Hal. (*cf.* Entom., 1867, p. 342) had not the legs of *Lithobius* been expressly mentioned. Mr. Edward Step has given us four females of *Proctotrypes pallidipes*, Jur., which he bred in 1909 from a larva of *C. maxillosus*, found at Worcester Park, Surrey.

12. *Cafius xantholoma*, Grav.

Mr. Frank Morey took six *Platymischus dilatatus* among this species on the beach at high-water mark in Freshwater Bay, I. W., on August 31, 1906, and Mr. P. de la Garde found it beneath a stone on the river beach at Teignmouth in June 1909.

## 12β. XANTHOLINUS.

“Mr. Smith exhibited the larva of a *Xantholinus*, to the underside of which were attached the pupae of a species of *Proctotrupidæ*” (Proc. Ent. Soc. Meeting, May 4, 1868).

## 12γ. ANISOTOMA CINNAMOMMEA, Panz.

I have seen a small ♀ Alysiiid, bred by Donisthorpe from truffles together with this beetle, though the parasitism was not established.—(C. M., ii, '08.)

13. *Teretrius picipes*, Fab.

Walker simply remarks (Ent. Mag., 1833, p. 141) that Dalman “supposes *Perilampus nicans* to be a parasite of *Lycus canaliculatus* and *Dendrophilus picipes*, particularly of the latter” (cf. Swed. Trans., 1822, p. 402). Nees, however, is much more explicit (Hym. Mon., ii, 49): “In Westrogothia, in fulcris aedium, quercinis, a *Lycus canaliculatus* et *Histere picipede* perforatis, e foveolis illorum serena die provenientem a se captum esse, b. Dalmanus memorat, argumentum inde hauriens hanc speciem metamorphosin in *Histeris picipedis* larvis subire. Scilicet cum nulla sibi ab ullo collectore hujus insecti exempla nunquam missa sint, neque id a se inventum nisi in illis fulcris, in quibus *Hister picipes* degeret, cum *Lycus canaliculatus* ubique fere vulgaris hoc consorte liber omnino videatur, ab infrequentia dicta *Histeris* etiam pendere *Perilampi*, hujus consortis, exiguam per orbem copiam. Nos autem simillimum ejus prope Sickershausen, ubi *Hister picipes* perquam rarus occurrit, Junio, Julio et Augusto mensibus in floribus, praesertim umbellatarum, v.c. *Pastinaceae*, plus una vice cepimus.” Is *Teretrius* simply inquiline in the *Lycus* burrows?

## 13a. COCCINELLID.\*

There is a specimen of *Euphorus sculptus*, Cresson, a North American Braconid, in Marshall's collection, in Brit. Mus., together with a perfect Coccinellid beetle, and the cocoon spun by this parasite in emerging from it.

16a. COCCINELLA QUOTATA \* (= *Mysia pullata*, Say).

16β. COCCINELLA SANGUINEA \* (= *C. novemnotata*, Herbst.).

16γ. HIPPODAMIA CONVERGENS, Guér.\*

16δ. CYCLONEDA SANGUINEA, Linn.\*

16ε. PSYLLOCORA VIGINTIMACULATA, Say.\*

From these five American Coccinellids, Howard records his Chalcid, *Homalotylus obscurus* (Descr. N. Amer. Chal. 22 et Insect Life, 1891, p. 193), upon his own and Chittenden's authority. His parasite is now synonymised with *H. terminalis*, Say (cf. Ashmead, Proc. U. S. Nat. Mus., 1900, p. 378).

## 16ζ. SCYMNUS.

"*Encyrtus fumifascia*, Walk.," a MS. name, is said by Dours (Cat. Hym. France, 91) to have been bred from a larva of this genus by Perris. *Scymnus* larvae are, however, said to prey on those of the Hemipterous *Aleurodes Chelidonii*, Linn., from which the *Encyrtus* more probably emerged (cf. Westw. Introd. ii, 443).

## 16η. SCYMNUS PINI-ABIETIS.\*

From this North American species, Shimer records (Trans. Amer. Ent. Soc., 1869, p. 385) a parasite, which he describes as *Eutelus Scymnac*, in a note. It is now synonymised with *Homalotylus terminalis*, Say.

## 16θ. SCYMNUS CERVICALIS, Muls.\*

*Homalotylus similis* is described by Ashmead (Trans. Amer. Ent. Soc., 1887, p. 190) as preying upon this species in Florida.

16*l.* SCYMNUS FLAVIFRONS, Blkb.\*

From a species under this name, Howard (Proc. U. S. Nat. Mus., 1898, p. 239) and Ashmead (*l. c.*, 1900, p. 389) record the former's Chalcid, *Heterarthrellus australiensis*, bred at Parametta, in New South Wales.

18*a.* ENDOMYCHUS BIGUTTATUS, Say.\*

Ashmead has erected a new genus for the reception of a Chalcid species, *Endomychobius flavipes* (Trans. Amer. Ent. Soc., 1896, p. 227), bred from this host in British Columbia.

19*a.* STELIDOTA STRIGOSA, Gyll.\*

The North American *Proctotrypes obsoletus*, Say (Boston Journ. Nat. Hist., 1836, p. 377), has been recorded from this Nitidulid by Riley, Howard and Comstock.

21*a.* ANOMMATUS 12-STRIATUS, Müll.

Mr. E. A. Fitch "exhibited a new species of *Proctotrupidae* from the Rev. T. A. Marshall, taken in Rothen Wood in company with *Anommatus 12-striatus*, four to six feet under ground" (Meeting of Ent. Soc., July 5, 1882).

22*a.* SILVANUS SURINAMENSIS, Jann.

Webster has observed this species to be preyed upon in America by *Neoscleroderma (Atelcopterus) tarsale*, Ashm. (Kief., Proct., i, 236; *cf.* Bull. U. S. Nat. Mus., 1893, p. 45).

22*β.* CATOGENUS RUFUS, Fab.\*

Kieffer adds that Ashmead's Proctotrypid, *Apenesia coronata*, has been bred from this American Cucujid (Proct., i, 236).

24*a.* TROGODERMA TARSALE, Melsheim.\*

Belfrage has observed *Laelius trogodermais*, Ashm., to prey upon the larvae of this species in British Columbia (Kief., Proct., i, 237).

24β. MACRONYCHUS QUADRITUBERCULATUS,  
Müll.

M. Pérez tells us that in France a species of Chalcid, named by him *Pteromalus macronychivorus* (Ann. Soc. France, 1863, p. 631), has been bred from this host.

25a. DERMESTES VULPINUS, Fab.

*Exochus gravipes*, Grav., is given by Dalla Torre (Cat. Hym., iii, 211) as parasitic upon this cosmopolitan beetle, upon the authority of van Vollenhoven; but we have failed to discover the reference and consider it almost certainly an error, since the Exochini are, probably exclusively, attached to Lepidoptera.

26a. ATTAGENUS PELLIO, Linn.

We also feel sceptical respecting the accuracy of Doumerc's record of the parasitism of *Ichneumon ruspator* = *Odontomerus dentipes*, Gmel., upon this species (cf. his observations on the subject, Ann. Soc. Fr., 1859, Bull., pp. 172-3).

28a. LEPIDODERMA ALBOTECTA, Waterh.\*

Like *Oryctes* in Europe, this species is attacked by a *Scolia* in the Antipodes. Froggatt says (Australian Insects, 1907, 105) of *Dielis formosa*, Guér., "this insect has been found in Queensland destroying the underground grub of the Sugar-cane Beetle (*Lepidoderma albhirtum*," sic).

32. *Anthaxia quadripunctata*, Linn.\*

Kriechbaumer gives his new Ophiionid, *Pyraemon pectoralis* (Ann. Nat. Hofmus. Wien., 1890, p. 484, ♂) as also parasitic upon this beetle.

32a. ANTHAXIA MORIO, Fab.\*

"*Atanycolus denigrator*, Nees. Par. de l' *Antaxia morio*. (Perris)."—(Dours' Cat., 74).

32β. CHRYSOBOTHRIS FEMORATA, Oliv.\*

From this American Buprestid, Riley and Howard have bred *Labena apicalis*, Cress. (Dalla Torre, Cat. Hym., iii, 522).

32γ. CHRYSOBOTHRIS DELECTA, Lec.\*

Ashmead describes his Chalcid, *Euchrysis maculipennis* (Trans. Amer. Ent. Soc., 1896, p. 232), which had been bred in California from this beetle.

32δ. CHRYSOBOTHRIS.

We are indebted to Mr. E. P. Stebbing for three males of the Pimplid, *Ephialtes iridipennis*, Morl., which he bred from some species of this genus at Simla about 1902.

34a. AGRILUS OTIOSUS, Say.\*

A new species of *Eurytoma* has been described by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 325), under the name *E. agrili*, which was believed to have emerged from this beetle in Virginia.

34β. TRACHYS MINUTA, Linn.

From this species, Dours tells us (Cat. Syn. Hym. de France, 1874), that *Microgaster albipennis*, Nees (p. 80), *Eulophus cervicornis*, Först. (p. 107), and *Entedon caelestis*, Gour. (p. 109), have been bred by M. Goureau in France.

35a. MELASIS BUPRESTOIDES, Linn.

*Diospilus melasidis*, Marsh., of which both sexes were bred by M. Decaux from the larvae of this species in France, is described by the former (André, Bracon. d'Europ., iii, p. 234).

36. *Agriotes obscurus*, Linn.

Curtis states (Farm Insects, 159) that the wireworm, whence the destroyer was shown to Kirby by Mr. Paul, of Starston, in Norfolk, was *A. obscurus*. In a fully-grown wireworm, Curtis himself found (*l.c.*, 181) two or three

white maggots, and another had already changed into a chrysalis from which he could see that it was a hymenopterous insect (*Proctotrypes*, in footnote). He quotes Bierkander (Communic. Bd. of Agric., vol. iv. p. 414), who says that six of thirty wireworms he had under observation were parasitised, and that "from one of these worms, with the loss of life of the host, six, ten, thirteen, to twenty guests have come out. Which ichneumon this is, I have not yet discovered."

### 36a. AGRIONES LINEATUS, Linn.

Curtis also figures (Farm Insects, pl. G, fig. 46) a larva, believed by him (*l. c.*, 198) to be that of this beetle, infested by *Proctotrypes* larvae, one of which pupated and protruded, accidentally he erroneously considers (cf. *Creophilus maxillosus*, ante), through the host's skin. It was sent him in August, 1841, from Surrey.

### 36β. MALTHODES LACINIATUS, Kiesw.\*

Nees suggests (Mon. Hym., i, 243) some association between *Telephora laciniata* and his Braconid *Alysia manducator* on *Hieraceum*; but the latter is now known to attack Diptera.

### 40a. THANASIMUS.

From an undetermined species of this genus, Ashmead has described a parasite under the name *Tetrastichus thanasimi* (Trans. Amer. Ent. Soc., 1894, p. 343).

### 43a. PTINUS.

Giard has given (Bull. Soc. Fr., 1898, p. 50; cf. Kief., Proct., i. 451 et 455) an interesting account "Sur les *Cephalonomia* parasites des larves de Ptinides," in which he describes a new species, *C. Xambewi*, whose larvae he found preyed gregariously to the number of fifteen or twenty in *Ptini*-cocoon.

### 43β. PTINUS FUR, Linn.

For the account of parasitism of some Proctotrypid, which Kieffer (Proct., i, 225) supposes to belong to the



genus *Cephalonomia*, cf. Lichtenstein's "Note sur *Gonolopus ptilinorum*" (Bull. Soc. France, 1874, p. xxi).

46. *Anobium*.

Walker says *Cheiropachus tutela* is found "on beams of wood perforated by *Anobium*" (Ent. Mag., 1837, p. 15); that *Trigonoderus ductilis* occurs "on posts and beams of wood perforated by *Anobium*, etc." (l. c., p. 18); and that ♂♂ of *Calosoter aestivalis* "stand in clusters near the holes perforated by *Anobium*" (l. c., p. 360).

47. *Anobium domesticum*, Fourc.

Dalla Torre says (Cat. Hym., iii, 434), upon Rondani's authority, that *Pimpla inquisitor*, Scop. = *stercorator*, Fab., also preys upon *A. striatum*; this appears to be a disproportionately large parasite. *Theocolax formiciformis*, Westw., is said by Fitch (Entom., 1881, p. 21) to certainly have been parasitic upon this beetle in an old aquarium-stand, whence they were plentifully bred by Mr. E. A. Butler. And early in May, 1909, I received many specimens from a lady, who found them emerging from the holes of this beetle in a valuable wooden box at Grantham. I have recently taken imagines of both *Spathius exarator*, Linn., and *Hecabolus sulcatus*, Curt., in outhouses in my garden at Monk Soham among those of the beetle; both sexes of the former occur annually, but were exceptionally abundant in 1909.—(C. M., 1911.)

## 47a. ANOBIUM VILLOSUM, Bon.\*

Dours records (Cat. 103) *Pteromalus gonatus*, Walk., and Kieffer (Proct., i, 421) *Laelius Perrisi*, Kief., upon Perris' authority, as parasitic upon this host.

49. *Anobium panicum*, Linn.

More recently Möller has described another parasite of this cosmopolitan beetle, under the name *Arthrolytus puncticollis* (Ent. Tidskr., 1882, p. 180, et 1883, p. 104) from Sweden.

51. *Ernobius mollis*, Linn.

The synonymy we previously gave, queried, is correct. Rondani has confirmed Westwood's doubtful connection

between *Anobii* and *Perilampus angustus* (cf. No. 46), Nees, by breeding out the latter from *E. mollis*, according to Dalla Torre (Cat. Chal., 354). During a shower on June 12, 1908, we were sheltering in a wood at Wangford St. Martin, Suffolk, and took a ♀ of *Doryctes striatellus*, Nees, hovering at a beetle-boring, evidently with the intention of ovipositing therein; on cutting out the boring, which was in a pine railing, we discovered larvae and immature imagines of *E. mollis*. No host has hitherto been assigned to this Braconid, but it is probably not uncommon since Mr. Donisthorpe has taken it also "at a beetle-boring in fence, 1907."—(MS.)

#### 54. *Anobium pertinax*, Linn.\*

Goureau also found *Cerocephala cornigera*, Westw., to be parasitic upon *A. pertinax* (Dours' Cat., 92); and Dalla Torre gives *Polyclistus (Exochus) femoralis*, Fourc., on the authority of van Vollenhoven (Hym. Cat., iii, 216); the latter more probably attacks Pyralids.

#### 54a. NICOBIUM CASTANEUM, Oliv., var. *hirtum*, Illig.\*

Kieffer (Proct., i, 234) says that *Sceleroderma domesticum*, Latr., preys upon *Nicobium hirsutum*—probably a lapsus calami for this variety—and undergoes its ecdysis in the cocoons of the Coleopteron: they all belonged to the var. *longiventre*, Kief.

#### 57. *Ptilinus pectinicornis*, Linn.

Note that the host of *Polysphincta elegans* is not specified by Ratzeburg (Ichn. d. Forst., ii, 101). Of *Hecabolus sulcatus*, Curt., Haliday writes (Ent. Mag., 1837, p. 49), "In larvis *Ptilini pectinicornis* sobolem procreat.—D<sup>aus</sup>. T. G. Rudd, in Curtis' Br. Ent." Smith adds *Calosota vernalis*, Curt., to the parasites of this species (Trans. Ent. Soc., 1852, p. 83). There are also two ♀♀ *Spathius exarator* in Marshall's col. labelled "Bishops Teignton, ex *Ptilinus pectinicornis*." Mr. E. A. Newbery found several of both sexes of *H. sulcatus* inside the borings of this beetle in an oak gate-post during June, 1911, at Dovercourt, Essex.

61. *Dorcatoma dresdensis*, Herbst.\*

*Bracon* (*Diospilus*) *melanoscelus*, Nees, and *B. dispar*, Nees, are also recorded (Nees, Mon. Hym., 63 et 64) from the same host and situation as those previously mentioned.

62. *Dorcatoma scotosella*, Muls.

Kieffer (Proct., i, 235) says the parasite already referred to belongs to his v. *sulcata*.

63. *Sinoxylon sexdentatum*, Oliv.\*

At the same place it is said that the specimen recorded by Giraud belongs to Kieffer's var. *sulcata*; at *lib. cit.*, 420, *Laelius tibialis*, Kief., and *L. Perrisi*, Kief., are also said to have been bred by Perris at Mont-de-Marsan from this host.

64. *Bostrychus capucinus*, Linn.

Perris' record very possibly referred to *Doryctes leucogaster*, Nees, both sexes of which were bred in some numbers from this beetle in Austrian oak in a timber-yard near the Millwall Docks in London during July 1908, as was recorded (E. M. M., 1908, p. 270) under the erroneous name *Bracon flavator*, Fab. (corrected Entom., 1909, p. 61). The host had bred in this locality for two or three years.

66. *Lyctus canaliculatus*, Fab.

*Cf.* notes under No. 13, *ante*. Dalla Torre (Cat. Chal., 355) gives *Perilampus micans* as preying without doubt upon the present species, upon Rondani's authority.

67a. LYCTUS STRIATUS, Melsheim.\*

A new species of the Chalcididous genus *Eurytoma* has been described by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 325) from this beetle, under the name *E. lycti*, from Virginia.

67β. CIS.\*

Chittenden has bred a new species of Proctotrypidae, from an undetermined individual of this genus in New York, which has been described as *Anoxus Chittendenii*, Ashm. (Bull. U. S. Nat. Mus., 1893, p. 68).

68. *Cis boleti*, Scop.

As to Nees' synonymy of *Meteorus atrator*, Curt., cf. his Mon., ii, 399. *Astichus arithmeticus*, Först., is also recorded as parasitic upon this beetle by Dours (Cat., 107). *Cephalonomyia formiciformis* "were taken by Mr. C. J. Pool, in burrows of *Cis boleti*, in fungus from Epping and Enfield" (Ent. Rec., 1907, p. 260).

## 68a. CIS PYGMAEUS, Marsh.

Donisthorpe found some specimens of *Cephalonomyia formiciformis*, near London, "on a tree infested by *Cis pygmaeus*" (Ent. Rec., 1907, p. 260).

## 68β. CIS FUSCIPES, Mell.

"*Plastanoxus Chittendeni*, Ashm., parasite de *Cis fuscipes* dans des champignons," in America (Kief., Proct., i, 236).

69. *Cis laminatus*, Mell.

Kieffer (Proct., i, 235) says the parasite of this beetle, already mentioned, belongs to his var. *sulcata*.

## 72a. ERGATES FABER, Linn.\*

Dalla Torre gives *Sichelia (Xylonomus) filiformis*, Grav., as having been bred by Ratzeburg from this Longicorn (Cat. Hym., iii, 383); we fail to follow him.

## 72β. PHORACANTHA OBSCURA, Don.\*

The peculiar *Megalyra fuscipennis*, Westw., has been seen by Mr. Rowland Turner to actually oviposit in the burrows of this species at Mackay, in Queensland (v. v.). W. W. Froggatt tells us (Australian Insects, 1907, 90) that he also has bred the same parasite from larvae of this genus.

## 72γ. PIESARTHRIUS MARGINELLUS, Hopc.\*

Froggatt adds (*lib. cit.*, 89) that he has found as many as fifty *Aulacus apicalis*, Westw., "each enclosed in a thin parchment cocoon, all matted together in a single cavity" of this longicorn, upon the larvae of which they had preyed, in Australia.

73. *Cerambyx*.

"Sir S. S. Saunders exhibited *Scleroderma domestica*, Westwood, received from M. André, bred from the larva of a longicorn beetle" (Meeting Ent. Soc., Nov. 2, 1881); and read further notes respecting it (Meeting, Dec. 7, 1881).

## 74a. OXYPLEURUS NODIERI, Muls.\*

An account of the ektoparasitism of *Scleroderma domesticum*, Latr., upon this rare longicorn at Arcachon, Gironde, is given in Proc. Ent. Soc., 1881, pp. xl et xxxiii.—Rev. Père Belon found about a dozen larvae on a single host (cf. also Kief., Proct., i, 233).

75. *Aromia moschata*, Linn.

*Polysphincta lignicola* is also given as parasitic upon *Cerambyx moschatus* by Dours (Cat., 67). No doubt can be felt that Bouché is in error in recording (Stett. Ent. Zeit., 1847, p. 164) the well-known parasite of fossors, *Perithous mediator*, Fab., from this species. On August 3, 1908, Morley received from Mr. Roland Smith a perfect ♂ of this beetle, taken recently by the Lea at Clapton, from which two ichneumonidous larvae had emerged the day after he had killed it with chloroform; no knowledge could be gleaned of the nature of the larvae, which, however, go to prove the species not immune from attack in Britain. Elliott captured a ♀ *Ephialtes heteropus* at Matley Bog in the New Forest, at a spot where this beetle is abundant, in June, 1907.

## 75a. PURPURICENUS KOEHLERI, Linn.\*

From this beautiful species Giraud tells us (Verh. z.-b. Ges., 1854, p. 605) that Perris has bred the Evaniid, *Aulacus striatus*, Jur.

76. *Hylotrypes bajulus*, Linn.

Dalla Torre points out (Cat. Hym., iii, 588) that *Cryptus seticornis*, Ratz. = *C. cyanator*, Grav., was also raised by Ratzeburg from this species; but his authority is obscure.

79. *Callidium sanguineum*, Linn.

Dalla Torre adds (Cat. Hym., iii, 383) *Xylonomus filiformis* to its parasites, upon Mocsary's authority.

80. *Callidium variabile*, Linn.

The records under No. 95, *Hoplosia fennica*, Payk., must be transferred to the present species. Ratzeburg's *Cerambyx fennicus* being the variety of *Callidium variabile* with blue, violet or green-black elytra as shown on Plate in his "Forstinsekten."

## 81a. CALLIDIUM ANTENNATUM, Newm.\*

From Virginia, Ashmead describes (Trans. Amer. Ent. Soc., 1896, p. 223) a Chalcididous parasite under the name *Aetroxys* (recte *Hetroxys*) *callidii*.

## 83a. GRACILIA MINUTA, Fab.

Dours gives (Cat., 109, 110) *Entedon confectus*, Walk., and *Tetrastichus deipyrus*, Walk., as parasitic upon *Gracilia pygmaea*, on Perris' authority.

85. *Rhagium bifasciatum*, Fab.

Bedwell also took *Ischnoceros rusticus* in the New Forest, in pine stumps which he was splitting, and where he found the same host, in June, 1904.

86. *Rhagium indagator*, Fab.87. *Rhagium inquisitor*, Fab.

Nees tells us in his Addenda (Mon., ii, 399) of *Bracon impostor*: "Metamorphosis in larva *Rhagionis indagatoris* et *inquisitoris* sub cortice pini," etc.; and Dalla Torre adds (Cat. Hym., iii, 383) that the former is also preyed upon by *Xylonomus rufipes*, Grav., on Brischke's authority.

88. *Rhagium mordax*, Fab.

Ratzeburg is instanced by Dalla Torre (Cat. Hym., iii, 477) as also recording *Ephialtes tuberculatus* from this species.

90. *Strangalia quadrifasciata*, Linn.

“Mr. H. St. J. Donisthorpe exhibited an example of *Helcon ruspator*, L., a Braconid new to Britain, taken at Cannock Chase on the 16th of July last, in a cell of *Strangalia 4-fasciata* in a fallen birch tree, and an example of the host captured at the same time. He pointed out that this very fine addition to the British List is recorded as parasitic on the same beetle on the Continent” (Proc. Ent. Soc., 19 Oct., 1910).

## 90a. STRANGALIA BIFASCIATA, Müll.\*

*Ephialtes gracilis*, Grav., is recorded from the synonymous *Saperda cruciata* by Dours (Cat., 70) and Dalla Torre (Cat. Hym., iii, 472), upon Rondani's authority.

## 92-92a. CRIOCEPHALUS RUSTICUS, Linn.\*

Marshall says of his *Cocloides Necsii*: “M. Seurat informs me that this species is common in the département de la Marne. He has bred ♂♀ examples of it, which were external and solitary parasites of the larvae of *Astynomus aedilis*, L., and of *Criocephalus rusticus*, L.”

## 92β. ACANTHOCINUS OBSOLETUS, Oliv.\*

Ashmead has described (Trans. Amer. Ent. Soc., 1887, p. 198) both sexes of a Chalcid preying upon this species in Florida, under the name *Metastenus acanthocini*.

## 92γ. LEPTOSTYLUS BIUSTUS, LeC.\*

From this American longicorn Ashmead describes (Proc. Ent. Soc. Washington, 1896, p. 12) his Chalcid, *Eusandalum (Ratzburgia) Hubbardii*.

## 94a. LEIOPUS VARIEGATUS, Haldem.\*

In Insect Life, 1893, p. 247, Chittenden records the breeding of the North American *Ephialtes irritator*, Fab., from this species (cf. Morley, Entom., 1909, p. 135).

97. *Exocentrus punctipennis*, Muls.\*

The "Braconid," formerly referred to, appears to be *Laelius bipartitus*, Kief. (Proct., i, 235) and *Blacus exocentri* to be a MS. name, as were so many of those given by Dr. Giraud in his posthumous paper of 1877.<sup>1</sup>

102a. MONOCHAMMUS SCUTELLATOR, Say.\*

102β. MONOCHAMMUS CONFUSOR, Kirby.\*

Upon both these American species Provancher has recorded (Fauna Entom. Canada, Hym., 1883, p. 447) the parasitism of our British *Rhyssa persuasoria*, which with us invariably confines its attacks to the Siricidae. *M. resutor*, Kirby, synonymous with the former host, is said by Westwood (Trans. Ent. Soc., 1851, p. 224) to be attacked by his new Evaniid, *Aulicus resutorivorus*.

105. *Saperda populnea*, Linn.

Mocsary, according to Dalla Torre (Cat. Hym., iii) has also raised *Cryptus viduatorius*, *Ephialtes luteipes* and *Xylophrurus lancifer* from this species; and Mayr appears satisfied (Verh. z.-b. Ges., 1874, p. 101) that the ♀ of *Torymus quercinus*, Boh. (= *T. tarsalis*, Walk.), was bred from it by Tschek in Austria.

106. *Saperda scalaris*, Linn.

Dr. Rudow records (Entom. Nachr., 1881, p. 310) his new *Coleocentrus scutellaris* as parasitic upon this species.

106a. SAPERDA DISCOIDEA, Fab.\*

Harrington says (Canad. Entom., 1891, p. 132) that his new Canadian *Xorides caryae* was bred from this species

<sup>1</sup> M. Jules de Gaulle, the learned author of the recent full Catalogue of French Hymenoptera, has been good enough to write me concerning Giraud's insects: "La collection Giraud est au Muséum de Paris; elle est d'un grand intérêt, mais Giraud avait le tort de travailler seul et paraît n'avoir eu guère de relations avec les ichneumonologistes de son temps; la collection est elle remplie de noms inédits, qui pour la plupart s'appliquent à des espèces soit déjà décrites soit surtout décrites depuis sa mort. En outre les localités sont rarement indiquées: les espèces proviennent le plus souvent d'Autriche."—(C. M.)



or *Dorchaschema nigrum*, Say, which is very rare and occurs only in the Southern States.

## 108a. OBEREA ERYTHROCEPHALA, Sch.\*

Morley (Ichn. Brit., iii. 254) is sceptical respecting Schmiedeknecht's suggestion that the Pimplid, *Procinetus decimator*, Grav., which is usually found among *Euphorbia cyparissias*, in whose stems this longicorn feeds, attacks *Oberea*, and regards it as more probably attached to the Lepidopterous *Gortyna flavago* in thistle stems. But Pastor Konow is stated by Marshall (Bracon. d'Europ., iii, 28) to have bred several individuals of both sexes of *Vipio guttiventris*, Thoms., from the larvae of this longicorn in Mecklenburg.

## 108β. OBEREA TRIPUNCTATA.\*

A new species and genus, *Zaleptopygus Obereae*, have just been published by H. L. Viereck (Proc. U. S. Nat. Mus., 1911, p. 294) for the reception of an Ophionid ichneumon, allied to *Cremastus*, Grav., which has been bred at Chicago from this host by Girault.

109. *Tetropium luridum*, Linn.

*Xylonomus precatorius*, Fab., is said to prey upon this species, as well as upon the above *Callidii*, by Dalla Torre (Cat. Hym., iii, 386), who refers to Ratzeburg as his authority.

110. *Tetropium castaneum*, Linn.

The *Lissonota* we previously referred to under this host is not *L. palpalis*, as tentatively suggested, but *L. varicoxa*, Thoms. (cf. Morl., Ichn. Brit., iii., 220).

## 110a. OEME GRACILIS, Lec.\*

From this American longicorn, Ashmead has described a new species of Ratzeburg's genus *Eusandalum*, called *Ratzeburgia Coquillettii* (Proc. Ent. Soc. Washington, 1896, p. 11).

## 110β. BRACHYTARSUS VARIUS, Fab.

Under the Chalcid *Encyrtus sylvius*, Nees (Mon., ii, 206) quotes Frisch. Ins., ix, 38: "Aber Anno 1730 hab' ich fast in keinem die in Nummer xxi gemeldten Käfer gefunden"; and adds in a note: "Insectum, a Frischio l.c. descriptum, coleoptratum Dermestinatorum ordinis est, uti ille *Anthrribus varius*, quem cl. Dalman in *Cocco Aceris* illaeso a se inventum, non Cocci parasitam, sed fortuito e cortice arboris exclusum Coccum penetrasse conjicit. Verum cum Frischius noster larvam in Cocco observaverit ex eademque imaginem coleoptratam prodeuntem viderit, vix est, quod dubitemus, etiam *Anthrribum varium* in Coccis metamorphosin peragere." This parasite is now well known to prey on Coccids.

## 110γ. BRUCHUS.

A Chalcid, parasitic in Canada upon an undetermined species of this genus, has been described by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 328) under the name *Bruchophagus borealis*. There is some evidence of the probability of a member of the same genus having been introduced into Britain, along with its host, in 1910.

## 111a. BRUCHUS MARGINELLUS, Fab.\*

Dours gives (Cat. Hym. France) *Eupelmus DeGeeri*, Dalm. (p. 89), *Eurytoma rufipes*, Walk. (p. 96), *Pteromalus varius* and *P. affinis*, Walk. (p. 104), as parasites, on Goureau's authority, upon this species.

118. *Bruchus villosus*, Fab.

Ratzeburg also appears to have bred his *Entedon spartii* (Ichn. d. Forst., iii. 211) from this host; and Rondani's *Sparthiophila bruchicida* (Bull. Soc. Ent. Ital., 1872, p. 208; fig. lib. cit., 1877, pl. iii, ff. 94-96), an allied parasite, was bred by him from *B. spartii*, with his *Pteromalus latipes* (l. c., 1874, p. 131, et 1877, p. 194).

119. *Bruchus rufipes*, Herbst.\*

From *B. nubilus*, Boh., Dours records (Cat., 102, 107 et 108) *Semiotus varians*, Walk., *Eulophus Coccilius*, Walk., and *Entedon Pentheus*, Walk., on the authority of Perris and Goureau.

121. *Bruchus pallidicornis*, Schh.

Goureau is said to have also bred from this species *Pachylarthrus brevicentris*, Först. by Dours (Cat. France, 99).

*amicus*

121a. BRUCHUS AUREUS.\*

A Chalcid, parasitic upon this species, has been described from New Mexico by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 342) under the name *Holcopelte producta*.

121β. BRUCHUS CICERI.\*

Rondani records, from a beetle under this name—which is not given in Heyden, Reitter and Weise's Cat. Col. Europ., 1906—a Chalcididous parasite, which he describes as *Entedon basalis* (Bull. Soc. Ent. Ital., 1877, p. 174, pl. i, ff. 11-13).

121γ. BRUCHUS ALBOSPARSUS, Fahr.\*

Dr. Fairmaire has described two Chalcids, *Eulophus gummiferæ* and *Pteromalus Doumeti* (Rev. et Mag. Zool., 1877, p. 207), which prey upon this species in Tunis.

121δ. BRUCHUS EXIGUUS, Horn.\*

As preying upon this American species in Iowa and Florida, Ashmead has instanced his new Chalcids *Mera-porus bruchivorus* (Bull. Ohio Exp. Stst., 1895, p. 161) and *Eupelmus cyaniceps* (Trans. Amer. Ent. Soc., 1886, p. 129).

121ε. BRUCHUS VARIUS, Oliv.\*

Upon Goureau's authority, Dalla Torre (Cat. Chal., 150, 274, 330) instances *Systole albipennis*, *Eupelmus atropurpureus*, Dalm., and *Pteromalus tenuis*, Walk., as attacking this species in France.

121ζ. BRUCHUS ALBISCUTELLARIS, Horn.\*

A Chalcid, parasitic in New Mexico upon this species, has been described by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 328) under the name *Bruchophagus Mexicanus*.

## 121η. SAGRA BOISDUVALII, Dup.\*

Vollenhoven says (Stett. Ent. Zeit. xl, 1879, p. 150) that Herr Binnendyk, Hortulanus at Buitenberg, Java, bred twelve Ichneumonids, which he names *Pimpla Sagrae*, from cocoons of this beetle taken from roots of a *Rhizophora*.

## 121θ. FIDIA VITICIDA, Walsh.\*

The Proctotrypid, *Fidiobia flavipes*, Ashmead, is recorded by its author (Journ. Cincinnati Soc. Nat. Hist., 1894, p. 171) as having been bred from this Eumolpid beetle.

## 123a. CRIOCERIS LILII, Scop.

Goureaux is said by Dours (Cat., 61) to have found *Campoplex errabundus*, Grav., to be parasitic upon *C. merdigera*. Dalla Torre ascribes the breeding of *Holo-cremnus errabundus* from *Lema merdigera*, L., to Rondani (Cat. Hym., iii, 87).

126. *Cryptocephalus quinquepunctatus*, Har.\*

In Ann. Soc. France, 1869, p. 20, M. Tappes records rearing a ♂ *Hemiteles pedestris* from *Cryptocephalus duodecimpunctatus*.

## 126a. CHLAMYS PLICATA, Fab.\*

*Tetrastichus chlamytis* is described by Ashmead (Trans. Amer. Ent. Soc., 1896, p. 234) as parasitic upon this species; as also is *Psilccera (Metopon) rufipes*, Ashm. (l. c., p. 229).

127. *Timarcha tenebricosa*, Fab.

Bignell's record, already cited, is not from Devonshire, as would appear from his inclusion of this species in his "List," but refers to the same individual of *T. tenebricosa* as is cited by him at E. M. M., 1891, p. 169: From a specimen of this perfect beetle taken at Land's End on March 30, 1891, forty-one larvae emerged the following day, of which twenty-three were already enclosed in slight white cocoons; the remainder died in the larval state; on

May 1 and following days nineteen *Perilitus falciger* attained perfection. One ♀ *Euphorus pallidipes*, Curt., was bred from a perfect specimen of this beetle, together with many pupae of presumably the same parasite by Donisthorpe in June, 1908, in London.

129. *Chrysomela graminis*, Linn.

Dalla Torre tells us (Cat. Hym. Chal., 59) that Rondani has ascertained the host of *Pteromalus gallarum*, Fonsc. = *Eulophus chrysomelae*, Nees, to be *Chrysomela graminis*, L.

[135. *Prasocuris Phellandrii*, Linn.

No hymenopterous parasite is yet known to us upon this species. *Delete* our former article upon it; and cf. *Hypera arundinis*, post.]

136. *Galerucella calmarienis*, Linn.

Walker says (Ent. Mag., 1838, p. 54) of *Encyrtus*—recte *Homalotylus*—*flaminus*, Dalm.: "Reared at Paris, from the chrysalis of *Galeruca Calmariensis*, by the Comte de Castelneau." He makes no mention of its attack on *Coccinellae* (cf. No. 16, ante), nor records it as British.

136a. GALLERUCELLA LUTEOLA, Müll.\*

One wonders what was Rondani's inadequately described Chalcid, *Oomyzus gallerucæ*, which he records (Bull. Comm. Agrar. Parma, 1870, p. 140) as having been bred from the eggs of *Galeruca xanthomelaena*, Schr., in Italy (cf. also Bull. Soc. Ent. Ital., 1877, p. 191).

136β. GALLERUCELLA VIBURNI, Payk.

Kawall has described under the name *Pteromalus octonus* (Stett. Ent. Zeit., 1858, p. 57) a Chalcid, which he bred in Russia from *Galeruca viburni*.

136γ. GALLERUCELLA LINEOLA, Fab.

137a. AGELASTICA ALNI, Linn.

Dalla Torre ascribes (Cat. Hym., iii, 59) to Ratzeburg the breeding of *Mesochorus thoracicus*, Grav., from both these beetles.

## 138a. PHYLLOTRETA ZIMMERMANNI, Crotch.\*

*Pleurotropis phyllotretae* has been described by Riley (Rep. Ent. Dept. Agric., 1884, p. 307) in both sexes from this species in Missouri.

139. *Psylliodes dulcamarae*, Koch.

Goureau also bred from *Haltica dulcamarae* the Braconid *Alysia nitidulator*, Gour., *Pteromalus communis*, Nees, and *Platigaster caudatus*, Gour., according to Dours (Cat., pp. 86, 104, 115).

## 139a. MICRORHOPALA XERENE, Newm.\*

*Tetrastichus microrhopalae*, Ashm., is recorded by him (Trans. Amer. Ent. Soc., 1896, p. 234) from this species.

## 139β. ODONOTA SUTURALIS, How.\*

Howard records from this species his *Trichogramma odonotae* (Entom. Amer., 1885, p. 117).

## 139γ. ODONOTA SCUTELLARIS, Oliv.\*

The same author describes his *Spilochalcis odonotae* (Descrip. N. Amer. Chalcid., p. 7) as preying upon this species. Cf. also Entom. Amer., 1885, p. 117.

## 139δ. ODONOTA (UROPLATA) NATURALIS, How.\*

A Chalcid, *Sympicis uroplatae*, Howard, is recorded by him (Entom. Amer., 1885, p. 117) from this Coleopteron.

## 139ε. HISPELLA WAKKERI.\*

Zehntner gives (Bladboorders Suikerriet Java, 1896) his *Eulophus femoralis* as preying upon this Cryptostomid in Java.

141. *Cassida seladonia*, Gyll.

Perris is also said by Dours (Cat., 97, 110) to have bred *Macroneura maculipes*, Walk., and *Tetrastichus orsidice*, Walk.—and Rondani, by Dalla Torre (Cat. Chal., 278), *Eupelmus urozonus*, Dalm.—from the same host.

141a. CASSIDA EQUESTRIS, Fab.

From this species Dours says (Cat., 105) that Perris bred *Elachestus dimidiatus*, Walk., in France.

141β. CASSIDA NEBULOSA, Linn.

" M. Guérin says one which was not transformed to a pupa produced, on 25th of July, from the middle of the back, thirty-nine very little *Chalcidites*, black with yellow legs, the eggs of which had been deposited by the mother upon the living larva.—Annales de la Soc. Ent. de France for 1846, page lxxi " (Curtis, F. I., 395).

141γ. CASSIDA RUBIGINOSA, Müll.\*

Rondani is said to have bred *Tetracampe* (*Pteromalus*) *galerucac*, Fonsc., from this species in Italy, by Dalla Torre (Cat. Chal., 86).

144a. HYMENORUS DOUBLIERI, Muls.\*

Bridgman and Fitch say (Entom., 1884, p. 180) that the anomalous Ophionid Ichneumon, *Nototrachys foliator*, Fab., has been bred from this species by Perris, according to Giraud.

144β. OMOPHLUS COERULEUS, Fab.\*

144γ. OMOPHLUS DISTINCTUS, Cast.\*

M. P. Lesne in his paper "Sur un Braconide du genre *Perilitus*, Nees" (Ann. Soc. Fr., 1892, p. 305) recounts the parasitism of his new *P. omophli* upon these two species of Heteromera in Algeria.

146. *Orchesia micans*, Panz.

Morley (Ichn. Brit., iii. 223) regards *Lissonota distincta*, Bridg., as undoubtedly parasitic upon this Heteromeron. In describing his *Macrocentrus punctifrons*, Thomson writes: "Utklackt ur *Orchesia micans* vid Ilstorp i Skane." [After *Porizon moderator*, in our first article, *dele* "106": Ratzburg's *P. moderator* appears to = *Thersilochus caudatus*, Holmgr.]

## 149a. SERROPALPUS.\*

From an unidentified species of this Heteromerous genus, Ern  records (Mitt. Schweiz. Entom. Ges., 1876, p. 518) the breeding of *Rhyssa persuasoria*, Linn.; but we suspect some error here, since this parasite has hitherto only been raised from Siricidae in Europe.

## 150a. PYTHO DEPRESSUS, L.

Professor Beare has given me two ♀♀ *Ichneumon confusorius*, Grav., which he took on April 1, 1907, at Aviemore, beneath the bark of a fallen Scots fir among larvae of this beetle. No association was, however, established, and the parasite was probably no more than passing the winter in its normal hibernaculum.—(C. M.)

## 150β. MORDELLA.

Thomson writes (Opusc. Ent., 2229) of *Microdus calculator*: "Funnen vid Ringsj n i Skane, der den tr ffades p  stubbar hvarur *Mordella* fl go ut."

## 151a. MORDELLISTENA PARVULA, Gyll.

*Ascogaster armatus*, Wesm., and *Entedon zanara*, Walk., are both said to have been bred by Perris from *M. inaequalis*, by Dours (Cat., 78, 109).

156. *Attelabus curculionoides*, Linn.

*Chaetostricha (Ophioneurus) signata*, Ratz., is also given as preying upon this species by Dalla Torre (Cat. Chal., 4).

## 156a. ATTELABUS BIPUSTULATUS, Sch nh.\*

Howard tells us in his Descriptions of North American Chalcids (p. 19) that *Aphycus annulipes*, Ashm., has been raised in Florida from this weevil.

157. *Byctiscus betuleti*, Fab.

"Dr. Filippi (Annals and Magazine of Natural History, 1852) observed in certain eggs of *Rhynchites betuleti* a small parasite like an infusorium, provided with a tail,



which it moved briskly with a lashing motion. No organs could at first be seen in this animalcule, but a small vesicle soon appeared therein, increased in size and finally developed itself into the larva of one of the *Pteromalidae*" (Ent. Weekly Intelligencer, 1857, p. 183, *et lib. cit.*, ix, ser. ii, pp. 461-464, pl. xvi A: "Upon the Mode of Generation of a Hymenopterous Insect of the Family of the *Pteromalidae*"); this was a hyperparasite, bred at Turin in some numbers. *Sigalphus caudatus* has also been found to prey upon this host by Goureau (Dours, Cat., 77).

161. *Apion apricans*, Herbst.

Mayr bred his *Holaspis apionis*, as well as *Eurytoma salicis*, Walk. = *gibba*, Boh., from this species in Germany and Austria (Verh. z.-b. Ges., 1874, p. 84, *et* 1878, p. 303). And *Pteromalus pionic*, Walk., Dours records (Cat., 104) as attacking it in France on Goureau's authority. "It appears that M. Guérin bred, either from the larvae or pupae of *A. apricans*, the minute fly called by Haliday *Calyptus*, the *Eubazus macrocephalus* of Nees. [Described.] This parasite does not seem to be exempt from persecution, for M. Guérin found with the *Eubazus* a beautifully coloured fly, called by Walker *Pteromalus* (sic) *pionic*, which is suspected to be parasitic upon the *Eubazus*" (Curtis, F. I., 481). Mayr says of *Eurytoma salicis* (*l. c.*, p. 332): "I have often bred this species from the faded heads of *Trifolium pratense*, in which *Apion trifolii* and *fagi*—identified by Herr Ludwig Millar—lived; Dr. Reinhard obtained it from clover heads from Saxony, in which *Apion apricans* lived."

162. *Apion bohemanii*, Thoms.

Three specimens of a new species of the Chalcididous genus *Eurytoma* have been described as also attacking this species by Mayr (Verh. z.-b. Ges., 1878, pp. 303 *et seqq.*) under the name *E. ononis* in Austria; he bred them from pods of *Ononis spinosa*, in which larvae of *Apion ononidis* were living.

165. *Apion loti*, Kirby.

Mayr bred (Verh. z.-b. Ges., 1878, p. 303) *Eurytoma salicis*, Walk. = *gibba*, Boh., in Lower Austria; he says:

“Not seldom this species is found as parasitic upon *Apion loti* in the pods of *Lotus corniculatus*; I received from Walker a pair under the name *E. mucianus*.”

166. *Apion rufirostre*, Fab.

Dours adds (Cat., 103) that he has also raised *Pteromalus tenuis*, Walk., from *A. rufitarse*.

167. *Apion trifolii*, Linn.

*Eurytoma salicis*, Walk. = *gibba*, Boh., has also been bred from this weevil by Mayr (Verh. z.-b. Ges., 1878, pp. 303 *et seqq.*) in Lower Austria.

## 173a. APION GENISTAE, Kirby.

Perris has found *Tetrastichus spartii*, Först., to be parasitic upon this species in France (Dours, Cat., 110).

## 173β. APION SCUTELLARE, Kirby.

*Entedon Busiris*, Walk., is given by Dours (Cat., 109) on Perris' authority as parasitic on *A. scutellare*; and *Eulophus ulicis* (*l. c.*) as having been bred by Goureau from the synonymous *A. ulicicola*, Perr. (*cf.* Ann. Soc. Fr., 1840, p. 91).

## 173γ. APIUM MARCHICUM, Herbst.

Dours (Cat., 108) says *Entedon Pharnus* has been found by Perris to attack this weevil.

## 173δ. APION LAEVIGATUM, Kirby.

The same author (*l. c.*, 104) instances *Pteromalus viridulus*, Walk., as parasitic upon this beetle also, whence it was bred in France by Perris, together with (p. 115) *Platigaster Chrysippus*, Walk., and (p. 116) *Belyta rufopetiolata*, Nees.

## 173ε. APION ULICIS, Först.

*Semiotus brevipennis*, Walk., has been bred by Goureau from this species (Dours, Cat., 102); and, from the same host, *S. apionis* is also described (Ann. Soc. Fr., 1847, p. 252) by Goureau.

173ζ. APION AENEUM, Fab.

Both *Sigalphus striatulus*, Nees, and *Pteromalus larvarum*, Nees, have been bred, says Dours (Cat., 77, 104), from this weevil by Goureau in France.

173η. APION PUBESCENS, Kirby.

Perris has bred *Eupelmus urozonus*, Dalm., and *Eulophus Alaparus*, Walk., from *Apion salicis*, Gyll. (Dours, Cat., 89, 106).

173θ. APION FUSCIROSTRE, Fab.

From this species is somewhat doubtfully recorded the Chalcid, *Microterys (Encyrtus) mitratus*, Dalm., by Mayr (Verh. z.-b. Ges., 1875, p. 710).

173ι. APION ASTRAGALI, Payk.

Mayr appears to have bred *Eurytoma salicis*, Walk. = *gibba*, Boh., from this species (Verh. z.-b. Ges., 1878-9, p. 332) in Lower Austria: "I obtained one male from a pod of *Astragalus glycyphyllos* in which probably larvae of this beetle had lived."

173κ. APION RADIOLUS, Kirby.

We may conjecture, since this is the only Coleopteron indicated by Kaltenbach as feeding on *Althaea*, that this was the host from which the ten specimens of *Eurytoma curculionum* were bred by Mayr in Austria (Verh. z.-b. Ges., xxviii, p. 308) out of the stems of *A. rosae*.

180. *Hypera rumicis*, Linn.

From this host, M. Decaux also records (Feull. Jeun. Natural., 1888, p. 97), *Eulophus ramicornis*, Fab.; and Osborne has described (E. M. M., xvi, p. 17) the cocoons of "two species of *Ichnemonidae*."

181. *Hypera polygoni*, Linn.

Brischke is said by Dalla Torre (Cat. Hym., iii, 243) to have recorded the parasitism of *Bassus (Promethes) festivus*, Fab., upon *Phytonomus polygoni*.

182. *Hypera plantaginis*, DeG.

Dalla Torre refers (*l. c.*, 661) to Ratzeburg having bred *Hemiteles pedestris*, Fab.—possibly the same species as was bred by Curtis, since the latter does not specify it—from this weevil.

## 182a. HYPERA VARIABILIS, Herbst.

Mr. E. A. Butler has bred *Mesochorus gibbulus*, Holmgr., hyperparasitically through *Limneria lugubrina*, Holmgr., from this species (*Entom.*, 1883, p. 67).

## 182β. HYPERA ARUNDINIS, Payk.

[*Cf.* No. 135, our article upon which belongs here.] The raising of *Canidiella quinqueangularis*, Ratz., is ascribed by Dalla Torre (*Cat.*, iii, 110) to Kriechbaumer; but Schmiedeknecht distinctly states (*Opusc. Ichn.*, xxi, 1909), 1677: “Die Exemplare welche Ratzeburg beschrieb hat stammten von Brischke: dieser hatte sie aus den Larven von *Phytonomus arundinis* gezogen.”

## 182γ. HYPERA TIGRINA, Boh.

I have examined single females of *Pimpla nucum*, Ratz., with the terebra aborted, and *Pezomachus intermedius*, Först., possibly parasitic upon it—since the two pupae whence they emerged were analogous—bred by E. C. Bedwell at St. Margaret's Bay, in Kent, from this beetle in September, 1908.

## 184a. LIXUS POLLIONIS, Laich.\*

*Pteromalus perilampoides*, Walk., is said by Dours (*Cat.*, 103) to have been bred from *L. onorporidi*, Besser MS., by Perris in France.

185. *Lixus iridis*, Oliv.\*

M. l'Abbé Pierre details the parasitism (*Revue Linéenne*, 1903, Nos. 220-4) of *Rhopalicus brevicornis*, Thoms., upon the eggs and of a species of *Tetrastichus*, Hal. = *Cirrospilus*, Walk., upon the larvae, pupae and imagines of this beetle.

188. *Pissodes notatus*, Fab.

Besides the species already mentioned, Dours gives (Cat., 72 et 102) *Bracon multiarticulatus*, Ratz., and *Cheirapachus tutela*, Walk., as parasites of this destructive weevil; Dalla Torre (Cat. Hym., iii, 436) adds *Pimpla instigator* upon Rondani's authority and its variety *processioneae* upon that of Ratzeburg, but these more probably emerged from their usual *Bombyx*. Giraud's record of the parasitism of *Coeloides initiator*, Nees, has more recently been confirmed by M. Carpentier (Marshall, Bracon. d'Europ., iii, 119). We have just seen, in December, 1910, two females of *Alloderus semirugosus*, Nees (cf. Entom., 1910), bred by Mr. G. H. Grosvenor last June from young *Pinus sylvestris* along with this beetle in Windsor Forest.

## 191a. PISSODES VALIDIROSTRIS, Gyll.\*

Dr. Mayr records (Verh. z.-b. Ges., 1878, pp. 300 et seqq.) the parasitism of his *Eurytoma Wachtli* upon this species; he says a single ♂ was bred in February from the weevil in branches of *Pinus nigricans* at Bruhl, near Vienna.

193. *Orchestes alni*, Linn.

Goureau also found *Pteromalus daimenes*, Walk., and *Entedon divitiacus*, Gour., to prey on this weevil (Dours, Cat., 104 et 108); from which Rondani bred his *Sparthiophilus orchesticida* (Bull. Soc. Ent. Ital., 1877, p. 198).

195. *Orchestes fagi*, Linn.

*Opius straminator*, Gour., and *Entedon distinctus*, Gour., were both bred from this species (Dours, Cat., 85 et 109) in France by their author.

## 200a. RHAMPHUS FLAVICORNIS, Clair.

Rondani is said to have bred the British Chalcid, *Cirrospilus vittatus*, Walk., from this insect by Dalla Torre (Cat. Chal., 84); and another of our species, *Eumotus cretaceus*, Walk., has also been raised from it by Giraud (*lib. cit.*, 158).

## 200β. ERIRRHINUS.

Dours (Cat., 102) tells us that Goureau has found his *Semiotus stramincipes*, and (p. 104) *Pteromalus elongatus*, Ratz., to be "parasites de divers *Erirrhinus*."

## 200γ. TYCHIUS SEMISQUAMOSUS, Lec.\*

From California, Ashmead has described a Chalcid, *Tanaostigmodes tychii*, from this weevil (Proc. Ent. Soc. Washington, 1896, p. 19).

201. *Miarus campanulae*, Linn.

From *Cleopus Campanulae*, Linn., Mayr also records (Verh. z.-b. Ges., 1878, pp. 301 *et seq.*) his *Eurytoma curcutionum* in Lower Austria; seventy-three specimens emerged during August and September from the seeds of *Campanula rapunculoides*, Linn., in which this host was living, and ten more in September and May from stems of *Althaea rosae* (*cf. ante* No. 173κ).

202. *Gymnetron antirrhini*, Payk.

*Eurytoma plumata*, Illig. = *aterrima*, Schr., has also been bred from this species, says Dours (Cat., 96), by Perris in France.

205. *Gymnetron villosulus*, Gyll.

Nees (Mon., ii, 423) synonymises *Diplolepis curcutionoides*, Bouché, with his own *Pteromalus seniculus* and adds "Habitat solitaria in larvis *Gymnaetri Villosuli*." *Bracon atrator*, Nees, has been also found to prey upon this species by Goureau (Dours, Cat., 73).

206. *Gymnetron teter*, Fab.\*

Besides *Pimpla gymnetri*, Dalla Torre instances (Cat. Hym., iii, 448) *P. ruficollis*, Grav., as attacking it; but he presents no authority for the statement.

207. *Gymnetron asellus*, Grav.\*

From this species, Mayr also records (Verh. z.-b. Ges., 1878, pp. 301 *et seqq.*) his *Eurytoma curculionum* in Lower Austria: three specimens were bred by Oberforster Wachtl, probably from *Verbascum* stems.

## 208a. GYMNETRON LYCHNITIDIS.\*

*Pteromalus transiens*, Rondani, *new* Walk., has been recorded from a weevil under this name by its author in Italy (Bull. Soc. Ent. Ital., 1877, p. 196).

209. *Mecinus collaris*, Germ.

"I have bred *Mecinus collaris* from galls of *Plantago maritima*, which are very abundant here (Southsea), though the beetle is rare, as 99 out of every 100 galls contain Hymenopterous parasites" (Moncreaff, E. M. M., 1870, p. 81). "*Micromelus pyrrogaster*, Walk.—I bred a male and female of this interesting Chalcid from *Mecinus collaris* galls, on the flowering stems of *Plantago maritima*. I have no doubt but that they were parasitic on these small beetles" (Bignell, Entom., 1884, p. 46). "I had some flower stems of *Plantago maritima*, all swollen and gouty-looking by the galls of *Mecinus collaris*; in some stems a cicatrix was visible, where probably the egg had been inserted; others showed a hole from which the weevil had evidently emerged. The stems were tunnelled up the centre and divided into compartments, each containing a larva, pupa or beetle, or larva or pupa of the parasite. These last were black, shining, little pupae; in some cases the cell contained two larvae. One beetle larva contained a large fat white Chalcid larva. In later stems there were hardly any beetles or pupae of beetles, but only Chalcid pupae. These were head upwards in the cavity and slightly attached at the lower end to the shrunken larva-skin. There were as many as four or five cavities in a stem, often right up into the flowering portion. This was in August and the Chalcid pupae remained in the dry and dead stems through the winter, the flies emerging in the following May and June. I should think quite seventy-five per cent. of the beetles were destroyed by this Chalcid" (H. J. Charbonnier, of Bristol, *in lit.*, Jan. 3, 1908. The parasite in this case is a fine green *Elachistid*.—C. M.)

210. *Anthonomus pomorum*, Linn.

Dours (Cat., 69) says Goureau has bred *Pimpla graminellae*, Grav., from this host; as well as (p. 73) *Bracon variator*, Nees.

## 210a. ANTHONOMUS MESPILI.\*

The same observer has raised (*lib. cit.*, 73) *Bracon intercessor* from this species, as well as (pp. 77, 85) *Sigalphus pallidipes*, Gour., and *Opius pygmacator*, Nees.

## 210β. ANTHONOMUS SIGNATUS.\*

From this host at Washington, Ashmead has described a new Chalcid, *Catolaccus anthonomi* (Insect Life, 1893, p. 185); and, a page later, a second parasite from the same locality, *C. incertus*, Ashm.

## 212a. NANOPHYES SICULUS, Schh.\*

*Cirrospilus* (*Ascodes*) *Chabrias*, Walk., is given on the authority of Perris (Dours, Cat., 106) as a parasite of *Nanophyes siculus*.

213. *Cionus scrophulariae*, Linn.

Bignell's record of *Pezomachus instabilis* confirms an earlier one, to the same effect, instanced by Rondani. Dours also gives (Cat., 108) *Entedon variolosus*, Gour., on its author's authority as a "parasite de la larve du *Cionus scrophulariae*" in France. It is just possible that this may be synonymous with *E. cioni*, described from the same host by Thomson (Hym. Scand., v. 246), or with *E. cionobius*, Thoms. (*lib. cit.*, 247).

215. *Stereonychus fraxini*, Deg.\*

*Pezomachus Gravenhorsti*, Fonsc. (*nee* Ratz.)—whatever its present name—was recorded by its author (Ann. Soc. Fr., 1852, p. 428) to also prey upon this beetle.

## 215a. TYLODERMA FOVEOLATUM, Say.\*

Ashmead has described two Chalcid flies as preying upon this American weevil; these are *Catolaccus tylodermae*



(Bull. Ohio Exp. Stat., 1894, p. 161), bred by Chittenden, and *Eurytoma tylodermais* (Trans. Amer. Ent. Soc., 1896, p. 218).

#### 219a. COELIODES ACEPHALUS, Say.\*

Under the name *Catolaccus coelioidis*, Ashmead has described (*loc. cit.*, p. 226) a new Chalcididous parasite of this species from Virginia.

#### 220. *Ceuthorrhynchus*<sup>1</sup> *assimilis*, Payk.

Rondani also bred his Chalcid, *Selitrichus* (*Encyrtus*) *ceuthorrhynchi* (Bull. Soc. Ent. Ital., 1872, p. 207; *cf. loc. cit.*, 1877, p. 196) from this host.

#### 222. *Ceuthorrhynchus pleurostigma*, Marsh.

*Diospilus oleraceus*, Hal., and *Sigalphus obscurellus*, Nees, bred from this weevil, "one of these underwent its transformation within the swellings caused by the beetle-larva, the other came out and formed cocoons in the earth" (Meeting Ent. Soc., March 5, 1884). *Alysia truncator*, Nees, is also said by Dours (Cat., 86) to have been bred from this species by Goureau. *Cf.* also Guérin-Méneville, Bull. Soc. Fr., 1845, p. xxxiv.

#### 224a. CEUTHORRHYNCHUS NAPI, Schh.\*

*Porizon moderator*, Linn., is said by Dours (Cat., 63) to have been raised from *Ceuthorrhynchus napi* by Goureau.

#### 224β. CEUTHORRHYNCHUS ASPERULUS, Schh.\*

From this species Dours says (*loc. cit.*, 103) Perris has bred *Pteromalus deplanatus*, Walk., *Eulophus Hegemon*, Walk. (p. 107), and (p. 108) *Entedon hippia*, Walk.

#### 224γ. CEUTHORRHYNCHUS GLAUCUS, Schh.\*

Dours tells us (Cat., 104) that Goureau has bred *Pteromalus fulgidus*, Först., from this weevil, together with (p. 107) *Eulophus viridarius*, Gour.

<sup>1</sup> Dalla Torre (Cat. Hym., iii, 143) gives *Campoplex gracilis* as parasitic upon a member of this genus on Ratzeburg's authority. This appears to be *in errore*; *cf.* No. 216, *supra*.

## 224δ. CEUTHORRHYNCHIDIUS POSTHUMUS,

Germ.

Rondani has bred the British Chalcid, *Eulophus Hegemon*, Walk., in Italy from *Amalus asperulus*, Boh. = *pumilio*, Gyll., according to Dalla Torre (Cat. Chal., 62); but cf. 224, *supra*.

225. *Baris laticollis*, Marsh.

*Bracon baridii* was first described by Rev. T. A. Marshall (André, 1897, p. 80) from specimens bred from *Baridius laticollis*.

226. *Baris chlorizans*, Germ.

Two pairs of *Bracon glaphyrus*, Marsh., were bred from larvae of this species toward the end of July and beginning of August, at Florence in Italy (Bracon. d'Europ., iii, 73).

## 227a. BARIS PICINUS, Germ.\*

From *Baridius picinus* has been raised, according to Dours (Cat., 108) *Entedon Pharnus*, Walk., by Perris.

228. *Balaninus nucum*, Linn.

A Pimplid, allied to *P. nucum*, Ratz., has been bred by Dr. Rudow from the same host and named by him (Ent. Nachr., 1883, p. 232, ♂) *Ephialtes balanini*.

## 228a. BALANINUS VENOSUS, Grav.

His *Orthocentrus nigristerneus* (*O. incisus*, Grav., var.) is recorded to prey in Italy upon *B. glandium* by Rondani (Bull. Soc. Ent. Ital., 1877, p. 192); as well as his *Odontomerus glandarius* (*lib. cit.*, p. 189).

## 228β. BALANINUS PISTACIPERDA, Rond.\*

The same author has described (*lib. cit.*, p. 180) a Chalcid, *Eurytoma pistaciae*, which he bred from a beetle of the above name in Italy.

228γ. *BALANINUS TEREBINTHIVORUS*, Rond.\*

And from this species he also brought forward a new Italian parasite, *Eurytoma terebinthi* (Bull. Soc. Ent. Ital., 1877, p. 180).

228δ. *BALANINUS NASICUS*, Say.\*

Riley has recorded the emergence of the Proctotrypid, *Trichacis rufipes*, Ashm., from this species in North America (Dalla Torre, Cat. Proct., 481).

230. *Balaninus villosus*, Fab.

*Ophion nutritor*, Fab., Piez., 139, is now placed in the genus *Diaparsis*, Först.

230a. *HETERONUS QUADRICOLLIS*, Fairm.\*

Kieffer remarks (Proct., i. 236) upon the parasitism of *Apenesia parasitica*, Smith, upon Madagascan palm weevil.

230β. *CALANDRA ORYZAE*, Linn.

"It is evident they are preyed upon by a parasitic hymenopterous insect, for in one of the grains I detected an apterous, blackish-green specimen, with rufous legs, but it was too much mutilated to draw from. I am pretty certain it is the same species, or closely allied to one, named *Meraporus graminicola* (Curtis' Guide, genus 630f.), which we often find in this country in July" (Curtis F. I., 322); "one of the Diplolepidae" (*lib. cit.*, p. 338, pl. K, fig. 19, ♀). Can this refer to *Pteromalus Calandrae*, Howard (Rep. Ent. U. S., 1880-81, p. 273), which was raised by him from the same host in Texas; or to *P. oryzinus*, Rondani (Bull. Soc. Ent. Ital., 1874, p. 131 *et* 1877, p. 195), which the latter also bred from it in Italy?

230γ. *CALANDRA GRANARIA*, Linn.

Possibly one or other of the above parasites is synonymous with Cameron's Indian *Pteromalus oryzae* (Mem. Manchester Soc., 1891, p. 184), which was bred from the

present species; as also, says Reinhard (Berl. Ent. Zeit., 1857, p. 75), was *Cerocephala cornigera*, Westw. But cf. Fitch (Entom., 1879, p. 47, et 1881, p. 21), who considers *Seiatheras trichotus*, Ratz., to be the parasite of *Calandra* and to be distinct from *Cerocephala*, with which Förster mingled it (Morl., Cat. Brit. Chal., 1910, p. 28).

### 231. *Magdalis*.

A female *Eurytoma*, bred by Oberfoster Wachtl from twigs of *Pinus nigricans* infested by a species of this genus near Vienna in February, is suggested by Mayr (Verh. z.-b. Ges., 1879, p. 322) as synonymous with Ratzeburg's *E. abieticola* (cf. No. 234, post); he says it differs from his *E. auricoma*, which it closely resembles, in its white and more densely pubescent face, testaceous, intermediate coxae, and centrally deeply impressed metanotum.

[~~Dele *Cryptus cehthroides* from our original article and cf. No. 234.~~]

### 234. *Magdalis violacea*, Linn.

*Cryptus (Helcostizus) cehthroides*, Ratz., though not assigned to any particular host species of *Magdalis* at Ichn. d. Forst., iii, 251—copied by us (Trans. Ent. Soc., 1907, p. 56)—is relegated at *lib. cit.*, iii, 138, to *M. violacea* (as pointed out by Vollenhoven, Pinac., 65).

### 234a. MAGDALIS ARMICOLLIS, Say.\*

A new species of the genus *Eurytoma* has been described as preying upon the present by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 326), under the name *E. magdalidis*, from Virginia.

### 234β. MAGDALIS RUFA, Germ.\*

Dr. Mayr records (Verh. z.-b. Ges., 1878, pp. 300 et seqq.) the parasitism of his *Eurytoma Wachtli* upon this species; he says the latter bred in the spring three ♀♀ and one ♂ from *M. rufa* in the branches of *Pinus nigricans* at Bruhl, near Vienna.

235. *Rhopalomestus tardyi*, Curt.

Chitty took this species of Pimplid, already recorded, flying round an ash tree full of the present weevil near Plymouth in June, 1907, and shortly afterwards Mr. Keys sent me much of the wood from the same tree, containing larvae of *B. tardyi* and dead *Odontomerus dentipes*. Both host and parasite emerged thence during the following August (cf. Morl., Ichn. Brit., iii, 11).

238. *Scolytus destructor*, Oliv.

Cf. also Wesmael (in Bull. Ac. Brux., 1838, p. 220, et Revue Zool., 1838, p. 144), "Notice sur le *Bracon initiator* l'ennemi du *Scolytus destructor*"; as well as Guérin-Méneville, Bull. Soc. Fr., 1846, pp. 969-77.

240. *Scolytus multistriatus*, Marsh.

We found *Cheiropachys colon*, Linn., actually in the burrows of this borer, among the pupae of the latter, in felled elm trunks at Blackwater, I. W., in June, 1907. A ♀ of *Coelodes scolyticida*, Wesm., was captured in my garden at Monk Soham, Suffolk, on June 27, 1908; it was investigating borings in an ancient, thick timber of a summer-house, more likely to be tenanted by *Anobium* than *Scolytus*.—(C. M.)

243. *Scolytus rugulosus*, Ratz.

*Eurytoma rufipes*, Walk., and *Cheiropachus quadrum*, Walk. = *colon*, Linn., have also been bred from this borer by Perris in France (Dours, Cat., 96, 102). Possibly one of the Chalcids already mentioned is synonymous with Ashmead's ♀ *Tetrastichus scolyti*, described by him from this species (Trans. Amer. Ent. Soc., 1894, p. 343; cf. *Platygerrhus scolyti*, Ashm., *lib. cit.*, p. 335); or with his *Eurytoma crassineura* (*lib. cit.*, p. 324).

## 243a. LOGANIUS FICUS, Schwarz.\*

Schwarz is said to have bred *Cerocephala scolytivora*, Ashm., from this beetle by the latter (Proc. Ent. Soc. Washington, 1894, p. 33).

244. *Hylastes palliatus*, Gyll.

In Britain, our first record is a Chalcid found in the burrows of this beetle by Donisthorpe at Nethy Bridge, late in July, 1907.

247. *Hylesinus fraxinii*, Panz.

Goureau also raised his *Eurytoma fulvipes* from this borer in France (Dours, Cat., 97); and Mayr says (Verh. z.-b. Ges., 1879, p. 322) that Oberforster Wachtl bred the former's *Eurytoma auricoma* from the same host in February and April near Vienna, adding that in the museum there is a pair presented by Dr. Förster and called by him *Eurytoma fraxinii*; he suggests that it may be synonymous with *E. abieticola*, Ratz., but is sceptical upon the point (cf. No. 234, supra). A ♂ and three ♀♀ of *Bracon longicaudis* were presented to the British Museum in 1907 by Rev. G. Crawshay, who had bred them from the cocoons of this beetle at Leighton Buzzard.

## 248a. HYLESINUS BICOLOR, Brull.\*

From this borer, Perris has bred *Encyrtus megacephalus*, Walk., *Callimome nobile*, Boh., *Pteromalus semiotoides*, Walk., *P. eulophoides*, Walk., *P. pirus*, Walk., and the Proctotrypid, *Sclerochloa fuscicornis*, Westw. (Dours, Cat., pp. 91, 95, 103, 112); the last species has, however, been determined as *Scleroderma Fonscolombeii*, Westw., by Kieffer (Proct., i, 234).

## 248β. HYLESINUS THUYAE, Perris.\*

Dours says (Cat., 110) that its author raised from this beetle *Tetrastichus deipyrus*, Walk.

250. *Phloeotribus oleae*, Fab.\*

From this species also has been raised in Italy, Rondani's *Eurytoma Bargaglii* (Bull. Soc. Ent. Ital., 1877, p. 179).

252. *Hylurgus minor*, Htg.

Wachtl bred his new Chalcid, *Hecydenia excellens* (Wien. Ent. Zeit., 1889, p. 89), from the same host in Austria;

and Mayr says (Verh. z.-b. Ges., 1879, p. 322) that he also bred from it on *Pinus nigricans* in January and February the latter's *Eurytoma auricoma*, near Vienna.

### 253. *Hylurgus piniperda*, Linn.

Cooper's parasitism was entirely supposititious (*cf. loc. cit.*) and he gives *C. pulchellus* as a MS. name of Walker. Perhaps one of the Chalcids already mentioned is synonymous with Hartig's inadequately described *Diplolepis hylesinum* (Forstl. Conversationslex. 1834, p. 198), which he bred from the same host in Germany. Dalla Torre gives no authority for his statement (Cat. Hym., iii, 604) that this species is also attacked by *Spilocryptus incubitor*, Ström., which is most improbable. We have seen a ♀ of *Bracon minutator*, Fab., bred by Mr. G. H. Grosvenor at Vaumoise, early in October, from galleries of this beetle.

### 253a. PHLOEOTRIBUS FRONTALIS, Oliv.\*

A Chalcid, named by him *Secodes phloeotribi*, has been bred by Ashmead from this borer in Virginia (Trans. Amer. Ent. Soc., 1896, p. 233), together with his *Cecidostiba dendroctoni* (*l. c.*, 1894, p. 338) and his *Eurytoma phloeotribi* (*l. c.*, p. 326).

### 254a. PHLOEOSINUS DENTATUS, Say.\*

A new species of the genus *Eurytoma* has been described as preying upon this beetle by Ashmead (Trans. Amer. Ent. Soc., 1894, p. 327) in Virginia, under the name *E. phloeosini*.

### 255a. POLYGRAPHUS RUFIPENNIS, Kirby.\*

From this species Ashmead has bred in Virginia both his *Cecidostiba dendroctoni* and his *C. polygraphi* (Trans. Amer. Ent. Soc., 1894, p. 338).

### 255β. HYPOTHENEMUS ERUDITUS, Westw.

Chittenden has observed that *Cephalonomia hyalini-pennis*, Ashm., attacks this cosmopolitan species in Florida (Kief., Proct., i, 237).

## 260a. PITYOPHTHORUS CONSIMILIS, Lec.\*

From Florida, Ashmead has described (Proc. Ent. Soc. Washington, 1894, p. 32) a Chalcid, parasitic upon this borer, under the name *Cerocephala pityophthori*; as well as a Proctotrypid, *Aradophagus fasciatus* (Bull. U. S. Nat. Mus., 1893, p. 166) from the same locality.

## 260β. PITYOPHTHORUS QUERCIPERDA, Swz.\*

## 260γ. BRACHYRHYNCHUS GRANULATUS, Say.\*

From these two species, also, *Aradophagus fasciatus* has been bred in Florida (*l. c.*).

## 263. DRYOCAETES VILLOSUS, Fab.

We have no British records of parasitism; but Grosvenor bred a ♂ Chalcid from it in June, 1908, at Bagley.

## 265a. TOMICUS SEXDENTATUS, Börn.

Mayr brings forward from Lower Austria (Verh. z.-b. Ges., 1878, pp. 301, 304, 321) *Eurytoma auricoma*, which he says was bred from *Hylurgus minor*, *Hylesinus fraxini* and the present species by Oberforster Wachtl, from *Pinus nigricans*, near Vienna.

266. *Tomicus laricis*, Fab.

Perris also bred *Amblymerus mirus*, Walk., from *Bostrichus laricis* in France (Dours, Cat., 102).

267. *Tomicus typographus*, Linn.

Possibly one or two of the Chalcids already instanced as attacking this species are synonymous with Hartig's *Diplolepis bimaculata*, *D. maculata* and *D. corticalis* (Forstl. Conversationslex, 1834, p. 198), all of which he bred in Germany from *Bostrichus octodentatus*, Payk.



269. *Pityogenes bidentatus*, Herbst.

Perhaps one of the Chalcids instanced by Ratzeburg or Giraud is synonymous with Hartig's inadequately described *Diplolepis aeneus* (Forstl. Conversationslex, 1834, p. 197), which he bred from the same host; together with his *D. bidentis* (*lib. cit.*, p. 198).

## 272. Undetermined Coleoptera.

*Cephalonomia mycetophila*, Kief., has been obtained at Amiens "par M. Carpentier, de bolets ligneux, habités par des larves de petits Coléoptères" (Proct., i, 455). *Campoplex lugens* is given by Dours (Cat., 61) as having been thought by Dr. Giraud to be a "parasite d'un Coléoptère"; which is very improbable.

## CLASSIFIED LIST OF PARASITES.

## First Supplement.

- |  |  |   |
|--|--|---|
| ACULEATA.  |  | 15. <i>Xylophrurus lancifer</i> , Grav.,<br>105       |
| 0. <i>Methoca ichneumonides</i> , 0a β             |  | 16. <i>Coleocentrus scutellaris</i> , Ru-<br>dow, 106 |
| EVANIIDAE.   |  | 17. <i>Perithous mediator</i> , Fab., 75              |
| 1. <i>Aulacus striatus</i> , Jur., 75a             |  | 18. <i>Ephialtes tuberculatus</i> , Fourc.,<br>88     |
| 2. ,, <i>resutorivorus</i> , Westw.,<br>102β       |  | 19. ,, <i>heteropus</i> , Thoms.,<br>75               |
| 2a. ,, <i>apicalis</i> , Westw., 72γ               |  | 20. ,, <i>irritator</i> , Fab., 94a                   |
| ICHNEUMONIDAE.                                     |  | 20a. ,, <i>iridipennis</i> , Morl., 32δ               |
| 3. <i>Ichneumon confusoriosus</i> , Grav.,<br>150a |  | 21. ,, <i>gracilis</i> , Grav., 90a                   |
| 4. <i>Hemiteles gyrini</i> , Parf., 7              |  | 22. ,, <i>luteipes</i> , Thoms., 105                  |
| 5. ,, <i>persector</i> , Parf., 7                  |  | 23. ,, <i>balanini</i> , Rudow, 228                   |
| 6. ,, <i>pedestris</i> , Fab., 126,<br>182         |  | 24. <i>Pimpla inquisitor</i> , Scop., 47              |
| 7. <i>Pezomachus comes</i> , Först., 7             |  | 25. ,, <i>sagrae</i> , Voll., 121η                    |
| 8. ,, <i>intermedius</i> ,<br>Först., 182γ         |  | 26. ,, <i>nucum</i> , Ratz., 182γ                     |
| 9. ,, <i>instabilis</i> , Först.,<br>213           |  | 27. ,, <i>instigator</i> , Fab., 188                  |
| 10. ,, <i>Gravenhorsti</i> ,<br>Fonsc., 215        |  | 28. ,, <i>ruficollis</i> , Grav., 206                 |
| 11. <i>Spilocryptus incubitor</i> , Ström.,<br>253 |  | 29. ,, <i>gymnetri</i> , Ratz., 206                   |
| 12. <i>Cryptus cyanator</i> , Grav., 76            |  | 30. ,, <i>graminellae</i> , Grav., 210                |
| 13. ,, <i>viduatorius</i> , Fab., 105              |  | 31. <i>Rhyssa persuasoria</i> , Linn., 102β,<br>149a  |
| 14. ,, <i>echthroides</i> , Ratz.,<br>231, 234     |  | 32. <i>Polysphincta elegans</i> , Ratz., 57           |
|  |  | 33. ,, <i>lignicola</i> , Ratz.,<br>75                |
|  |  | 34. <i>Lissonota palpalis</i> , Thoms.,<br>110        |
|  |  | 35. ,, <i>varicoxa</i> , Thoms.,<br>110               |

36. *Lissonota distincta*, Bridg., 146  
 37. *Procinetus decimator*, Grav., 108 $\alpha$   
 38. *Ischnocerus rusticus*, Fourc., 85  
 39. *Xylonomus filiformis*, Grav., 72 $\alpha$ , 79  
 40. ,, *preparatorius*, Fab., 109  
 41. ,, *rufipes*, Grav., 86  
 42. *Xorides caryae*, Hartn., 106 $\alpha$   
 43. *Odontomerus dentipes*, Gmel., 26 $\alpha$ , 235  
 44. ,, *glandarius*, Rond., 228 $\alpha$   
 45. *Labena apicalis*, Cress., 32 $\beta$   
 46. *Exochus gravipes*, Grav., 25 $\alpha$   
 47. *Polyclistus femoralis*, Fourc., 54  
 48. *Orthocentrus nigristerneus*, Rond., 228 $\alpha$   
 49. *Bassus festivus*, Fab., 181  
 50. *Nototrachys foliator*, Fab., 144 $\alpha$   
 50 $\alpha$ . *Gausocentrus gyrini*, Ashm., 6 $\alpha$   
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